



Rajasthan Technical University
University Departments
(Formerly Engineering College Kota)
(University College of Engineering Kota)



INFORMATION BROCHURE

M.Tech

Digital Communication & Control and Instrumentation

DEPARTMENT OF ELECTRONICS ENGINEERING

VISION OF THE DEPARTMENT

To achieve academic excellence in Electronics Engineering.

MISSION OF THE DEPARTMENT

To impart quality engineering education in Electronics Engineering.

To facilitate and motivate learning and research.

To prepare technical expertise along with professional ethics as per societal needs.



University Departments, Rajasthan Technical University, Rawatbhata Road, Kota – 324010

<http://udrtukota.ac.in/UTD/>

❖ **Program Description:** The department of Electronics Engineering offers programs leading to award of M. Tech degree in,

1. **Digital Communication**

2. **Control and Instrumentation**

The programs are developed and designed in consultation with industry partners and R&D organizations. The programs focus on the development of futuristic technical skills: problem solving, critical thinking, digital knowledge, communication, critical analysis and collaboration. The programs offer exposure in digital communication, satellite and mobile comm, optimization techniques, Digital signal & image processing, Microwave engineering, measurement systems & Error analysis MEMS & modern digital control theories, Instrumentation techniques, biomedical electronics etc.

❖ **Program Specific Outcomes (PSOs):**

- **PSO 1:** Apply the fundamentals of mathematics, technical and engineering knowledge to identify, formulate, design and investigate complex engineering problems of analog and digital electronics circuits, communication, instrumentation and control systems.
- **PSO 2:** Apply the appropriate techniques and modern engineering hardware and software tools to engage in life-long learning and to successfully adapt in multi-disciplinary environments.
- **PSO 3:** Aware of the impact of professional engineering solutions in societal, environmental context, professional ethics and be able to communicate effectively.

❖ Program highlights:

- Industry oriented projects to pick up quick industry skills.
- Optional Industry internships on real industry challenges.
- Ample opportunities for placement after four semesters for the well trained and highly employable graduates.

❖ Target Groups:

- Students seeking advance knowledge of digital communication or Control & Instrumentation
- Professionals from Electronics communication and Electronics instrumentation and control services
- Researcher, Planner and operator interested in the field of digital communication, Control, Instrumentation system.
- The admission criteria based on AICTE eligibility norms.

Who can apply:

- For Digital Communication: B.E./B.Tech/Equivalent in Electronics/Applied Electronics/Instrumentation/ Electrical and Electronics/ Electronics & Communication / Biomedical Engineering /EI &C / M.Sc. (Electronics)/Electrical and Electronics.
- For Control & Instrumentation: B.E./B.Tech/Equivalent in Electronics/Applied Electronics/Electronics & Communication / Biomedical Engineering /EI & C/ Electrical and Electronics.

*For specific details, please refer CAM2020 booklet/brochure.

❖ Course Duration: Two years.

❖ Scholarship: Gate Scholarship to qualified as per AICTE Norms, Other Scholarships are subject to eligibility and as per the norms.

❖ Courses offered in Digital Communication:

➤ **Core courses:**

- Digital Communication System
- Advanced Digital Signal Processing
- Wireless and Mobile Communication
- Antenna Theory & Techniques

➤ **Program specific electives courses:**

- High Frequency Electronics
- Optimization Techniques
- Detection & Estimation Theory
- Advanced Computer Networks
- Statistical Signal Processing
- Satellite Communication
- Micro-Electro-Mechanical-Systems
- Advanced Optical Communication
- Artificial Neural Networks
- Information Theory & Coding
- Digital Image Processing
- Telecommunication Switching & Networks
- MIMO System
- RF and Microwave Circuit Design
- Pattern Recognition and Machine Learning

➤ **Research Methodology and IPR**

➤ **Open Elective** (Business Analytics, Industrial Safety, and Cost Management of Engineering Projects)

➤ **Audit Course**

➤ **Mini Project with seminar**

➤ **Labs:**

- Digital Communication System Lab
- Modelling & Simulation Lab
- Antennas and Radiating Systems lab
- Wireless and Mobile Communication Lab

❖ Research Domains for Dissertation in Digital Communication:

- VLSI Design
- Microelectronics
- R.F. & Microwave
- Signal and Image Processing
- Communication Systems
- Wireless and Optical Communication Systems
- Nanotechnology
- IoT and Robotics

❖ Courses offered in Control & Instrumentation:

➤ **Core courses:**

- Modern Control System
- Robotics: Mechanics and Control
- Nonlinear Control Systems
- Advance Biomedical Instrumentation

➤ **Program specific Electives courses:**

- Advanced Digital Signal Processing
- Artificial Intelligence in Industrial Automation
- Optimization Techniques
- Measurement Systems
- Industrial Automation Systems
- Power System Dynamics and Control
- Advance Biomedical Instrumentation
- Artificial Neural Networks
- Adaptive Control Systems
- Large Scale Systems
- Optimal Control Theory
- Multi Variable Control Systems
- Micro-Electro-Mechanical-Systems
- Network Control Systems
- Digital Control System
- Embedded Systems

➤ **Research Methodology and IPR**

➤ **Open Elective** (Business Analytics, Industrial Safety, and Cost Management of Engineering Projects)

➤ **Audit Course**

➤ **Mini Project with seminar**

➤ **Labs:**

- Control and Computation Laboratory
- Modeling & Simulation Lab
- Advanced Instrumentation Lab
- Process Instrumentation & Automation Lab

❖ Research Domains for Dissertation in Control and Instrumentation:

- Control & Instrumentation
- Soft Computing
- Intelligent Control
- Biomedical Instrumentation
- Signal & Image processing
- Microprocessor & Micro Controller
- Nanotechnology
- IoT and Robotics

❖ **Available Facilities:** Well-equipped Laboratories, Equipment and software are available as per the curricula and R&D.

- Advance Communication Lab
- Instrumentation Lab
- Signal Processing Lab
- Biomedical Lab
- Real Time control Lab
- Skill Development Lab
- Advance Instrumentation Lab
- Advance Process Control Lab

❖ **Available Equipment/Software:**

- Electronic Loop System
- Thermal Imager
- ECG/EEG/EMG Signal Acquisition Setup
- Digital Signal Processor
- 3D printer
- Vector Network Analyzer 20 GHz
- Antenna Testing Facility Anechoic Chamber
- Dry PCB Design and fabrication system
- Control Valves and Plant Simulator
- Optisuite
- MATLAB
- VLSI – CADENCE
- MENTOR GRAPHICS
- ORCAD P-SPIICE
- VHDL PROCESSING (XILINX) with FPGA KIT

Most of the software are network licensed, multiuser.

Faculty



Dr. Rajeev Gupta
Professor and Head
Specialization: Control & Instrumentation, Soft Computing, Intelligent Control



Dr. R.S. Meena
Designation: Professor
Specialization: VLSI Design, Microelectronics, Microwave



Dr. Mithilesh Kumar
Designation: Professor
Specialization: UWB Microstrip Antenna and Microwave



Dr. Ranjan Maheshwari
Designation: Professor
Specialization: Signal processing, Biomedical Instrumentation



Dr. Ajay Khunteta
Designation: Assoc. Prof.
Specialization: Signal and Image Processing, Communication Systems



Mr. Pankaj Shukla
Designation: Assoc. Prof.
Specialization: Digital Communication and Signal Processing.



Dr. Lokesh Tharani
Designation: Assoc. Prof.
Specialization: Wireless and Optical Communication Systems



Dr. Jankiballabh Sharma
Designation: Assoc. Prof.
Specialization: Signal and Image Processing, VLSI Design



Dr. Girish Parmar
Designation: Assoc. Prof.
Specialization: Control & Instrumentation



Dr. Manisha Bhandari
Designation: Assoc. Prof.
Specialization: Control & Instrumentation



Dr. Rajshree Taparua
Designation: Assoc. Prof.
Specialization: Control & Instrumentation



Dr. Rajesh Bhatt
Designation: Assoc. Prof.
Specialization: Control & Instrumentation



Dr. Deepak Bhatia
Designation: Asst. Prof.
Specialization: Wireless & Mobile Communication, Nano Thin Films, MEMS Cantilevers Sensors, RF & Microwave Communication



Dr. M.L.Meena
Designation: Asst. Prof.
Specialization: RF & Microwave Communication, Advance Antenna Systems, EM Waves Propagation.



Mr. Riyaz Ahmad
Designation: Asst. Prof.
Specialization: VLSI Design



Mr. Vipin Prakash Yadav
Designation: Asst. Prof.
Specialization: Digital Image and Signal Processing



Mr. Nitesh Kumar
Designation: Asst. Prof.
Specialization: Optical Communication



Mr. Dinesh Bhatia
Designation: Asst. Prof.
Specialization: Photonics, Optics, Wireless & Mobile Communication

❖ Contact Information:

DIGITAL COMMUNICATION

Program Coordinator

Dr. Mithilesh Kumar

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CONTROL AND INSTRUMENTATION

Program Coordinator

Dr. Rajesh Bhatt

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